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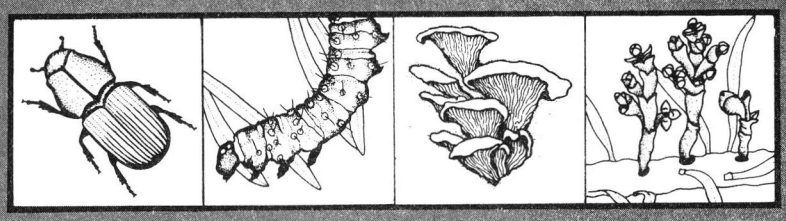
Forest Pest Management



Report 84-7 April 1984

DWARF MISTLETOE EVALUATION, WILLOW MOUNTAIN - BUTTERFLY PROJECT, BITTERROOT NATIONAL FOREST

by

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ABSTRACT

Residual Douglas-fir and lodgepole pine are dwarf mistletoe infested and pose a threat to existing regeneration. Felling or gridling these residuals, along with sanitation/thinning, will reduce mistletoe intensity and increase future volume yields. Present net worth of the project is $9.39/acre. Benefit-cost ratio is 1.15/1. Use of pest management funds is recommended.

INTRODUCTION

The Stevensville Ranger District has proposed a fiscal year 1985 dwarf mistletoe suppression project on 280 acres in the Willow Creek drainage (figure 1). Kimberly Teuber, Norbert Curry, and I visited several stands on August 12, 1983. I was also in the general area in 1979 looking at another project.

CAUSAL AGENTS, HOSTS, AND DAMAGE

Arceuthobium douglasii attacks Douglas-fir and A. americanum attacks lodgepole pine. Dwarf mistletoe infection causes a reduction in tree vigor, height, and diameter growth, along with some mortality. Volume loss estimates in infested Douglas-fir type are about 20 cubic feet per acre per year.[1] Volume loss in infested lodgepole pine type on the Bitterroot NF is 7.9 cubic feet per acre per year.[1] This does not include losses to other pathogens and insects in trees made vulnerable by mistletoe.

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[1] Dooling, O. J. and R. G. Eder. 1981. An assessment of dwarf mistletoes in Montana. USDA Forest Service, Northern Region. Forest Pest Management Report 81-12.

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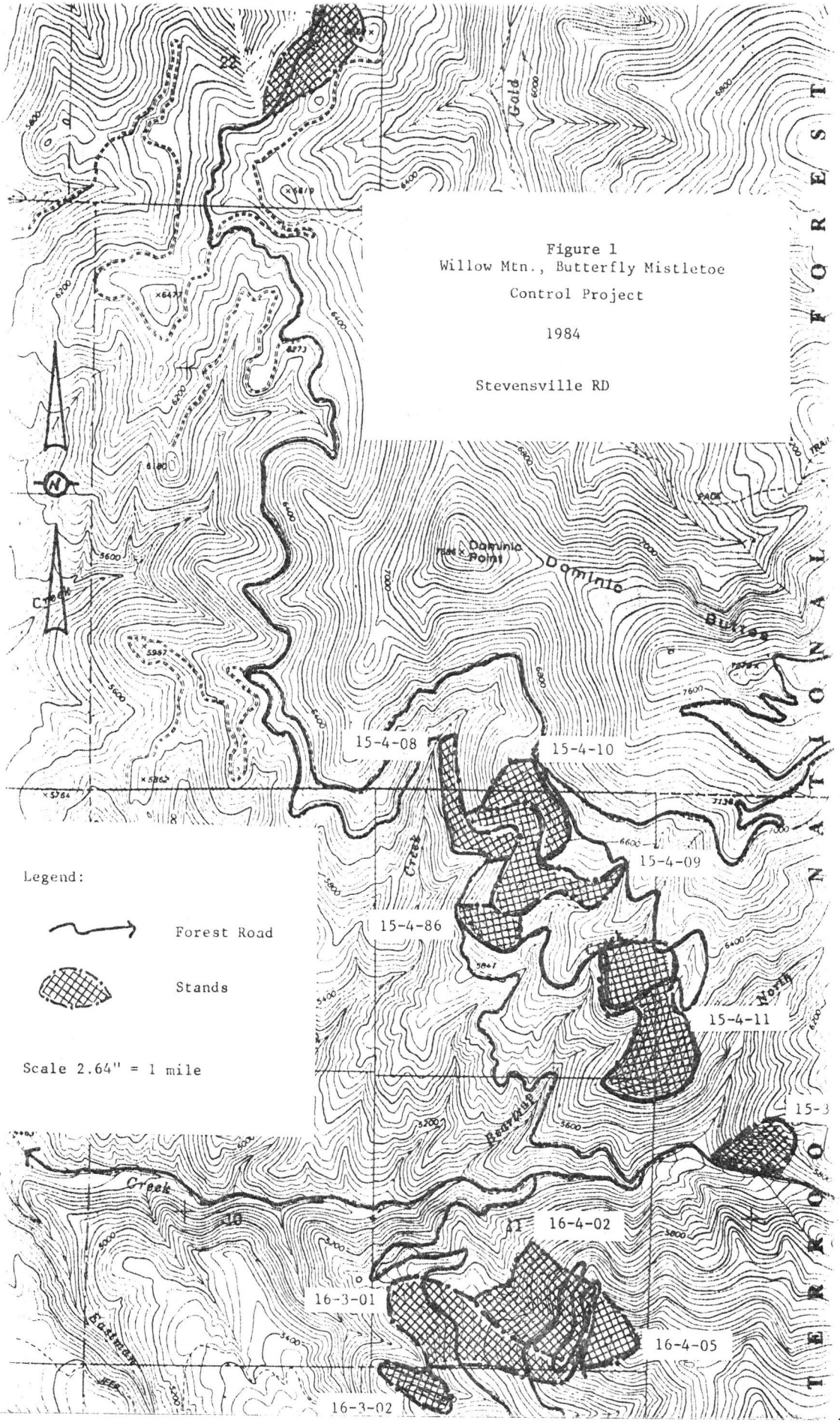
Figure 1
Willow Mtn., Butterfly Mistletoe
Control Project
1984
Stevensville RD
Legend:
Forest Road
Stands
Scale 2.64" = 1 mile
15-4-08
15-4-10
15-4-09
15-4-86
15-4-11
16-4-02
16-3-01
16-4-05
16-3-02
Gold
Damnic
Butler
North
Bearskin
Eastman
Creek
NATIONAL FOREST

SUPPRESSION PROJECT DESCRIPTION[2]

The project is located in sections 1, 2, 10, 11, 12, and 14, T6N, R19W. The project area encompasses 364 acres which were cut from 1961 to 1968. The stands are stocked with between 133 and 1,647 seedling- to sawtimber-size trees/acre. A 1983 examination showed from 8 to 170 seedling-sapling size and 2 to 10 sawtimber size trees/acre were dwarf mistletoe infested. About 280 acres need dwarf mistletoe treatment. This includes all or portions of stands 10-5-47, 15-3-01, 15-4-08, 15-4-09, 15-4-10, 15-4-11, 15-4-86, 16-3-01, 16-3-02, 16-4-02, and 16-4-05.

MANAGEMENT ALTERNATIVES

1. Defer treatment.--Potential yields would be considerably less than those expected if the stands were treated.

2. Remove mistletoe-infested residuals; thin/sanitize existing regeneration.--Potential yields would be increased because this would largely eliminate mistletoe from susceptible species.

3. Convert to nonsusceptible species.--Potential yields would be increased, even though in some cases this would not be as silviculturally desirable as maintaining a diversified stand containing susceptible species. In some areas this would also forego accumulated growth of the stand.

PREFERRED TREATMENT

Preferred treatment is a mix of alternatives 2 and 3.

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[2]From a project proposal prepared by Kimberly Teuber, Norbert Curry, and Robert Wiegand, Stevensville RD.

ECONOMIC ANALYSIS

Economic analysis is based on these data:

Control costs	$61.61/acre
Years to product	110
Yield, no treatment	6 MBF/acre
Yield, treatment	12 MBF/acre
Stumpage	$100/MBF
Discount rate	4%

Year	Volume without treatment (MBF/acre)	Volume with treatment (MBF/acre)	Benefit of treatment (MBF/acre)	Benefit value at harvest[1] ($/acre)	Present value of benefit[2] ($/acre)	Project cost ($/acre)
0	-	-	-	-	-	61.61
(Age) 20						
110						
(Age) 130	6	12	6	5,298.72	71.00	-
	6	12	6	5,298.72	71.00	61.61

[1]Current stumpage of $100/MBF increased at 2 percent compound interest.
[2]Harvest value discounted to present at 4 percent.

Present net worth is the difference between present value of benefits and project costs: $9.39/acre. Benefit cost ratio is 1.15/1. Increasing stumpage values over time make the project economically feasible.

DISCUSSION

Recovery of volume losses through dwarf mistletoe control generates additional employment in the forest products industry and result in "value added." While value added cannot be used in an economic analysis, it is usually substantial enough to be considered when determining overall benefits. Each million board feet of timber cut creates 7.3 person years of employment, paying an average of $18,500 per person per year.[3] For the proposed project, this increased employment amounts to 0.04 year in 2095 and would add $740 to the economy for each acre in the treatment area.

This project shows a positive return for the investment, but not all projects do. In those cases where the return is not positive, overall benefits such as reducing or eliminating mistletoe for more than a single rotation, and increasing present and future employment, often outweigh strict financial considerations.

Control also protects other investments such as costs for site preparation, planting, and timber stand improvement.

RECOMMENDATIONS

Reduction of dwarf mistletoe impact through silvicultural practices is both biologically and economically sound. I recommend the use of pest management funds for the project.

Because control will be by felling or gridling scattered cull trees from areas already essentially clearcut, and thinning of overstocked stands, there will be no additional adverse impact on other resources. This project is neither major nor controversial, and does not need an environmental analysis.

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[3]Personal communication; Charles Keegan and Paul Polzin, Bureau of Business and Economic Research, University of Montana, Missoula, MT.